

**Via Certified Mail and Electronic Mail**

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Re: U.S. EPA's Response to  
USG Interiors Inc.'s November 2, 2010 Submission

Dear Brett:

Thank you for meeting with U.S. EPA technical staff and myself on March 24, 2015, to discuss the amicable resolution of USG Interiors Inc.'s ("USG") violations set forth in U.S. EPA's June 21, 2010 Finding of Violation/Notice of Violation ("FOV/NOV"). We agreed during our discussion that U.S. EPA would prepare its response to the report and arguments USG submitted to U.S. EPA on November 2, 2010. We respond to each of USG's contentions below, following a brief discussion of the two modifications at issue.

**I. Projects and Violations**

**Red Wing Cupola Skip Hoist Motor/Gearbox Project**

In 1996, USG replaced the motor for the No. 2 Cupola skip hoist to allow the company to safely increase the amount of raw materials fed into the cupola from each skip hoist bucket load. Prior to the modification, USG was regularly loading the skip hoist with approximately 5,500 pounds of material per load, even though the skip hoist motor had a capacity rating of only 3,500 pounds.<sup>1</sup> USG replaced the existing skip hoist motor with one capable of handling the larger loads (an approximately 6,500 pound capacity motor). According to USG's Capital Request and Authorization for the project, the modification would give the new skip hoist, "the capacity to handle higher production rates and occasional overloading of the bucket," resulting in an increase in the raw material melt rate from 5 tons per hour to 8 tons per hour.

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<sup>1</sup>To avoid having what USG referred to as "upset conditions," USG needed to fill each bucket within the 3,500 pound motor capacity.

Because the new skip hoist motor allowed USG to safely add an additional 3,000 pounds of raw material to each bucket load, the modification enabled USG to increase its production from the No. 2 Cupola. USG should have conducted a pre-construction calculation that would have shown that the new skip hoist motor would cause a “significant net sulfur dioxide (SO<sub>2</sub>) emissions increase,” thus triggering the need for it to apply for a Prevention of Significant Deterioration (“PSD”) construction permit. In addition, USG’s own production data shows that the melt rate for the No. 2 Cupola increased from XXXX in 199X to XXXX in 1997 and XXXX in 1998. Nevertheless, USG failed to: (1) obtain the proper pre-construction permits; (2) conduct appropriate pre-construction BACT analyses; and (3) install and operate BACT-level controls on the SO<sub>2</sub> emissions from the No.2 Cupola. Accordingly, at its Red Wing, Minnesota facility, USG violated and continues to violate the PSD requirements under Section 165 of the CAA, 42 U.S.C. § 7475, the implementing regulations of Title V set forth at 40 C.F.R. Part 70, and the Minnesota State Implementation Plan. *Also, do we have figures on the total mineral wool production increase following the modification?*

### **Walworth Cupola Skip Hoist Pulley and Blow Chamber Project**

On March 23, 1992, USG filed with the Wisconsin Department of Natural Resources (“WDNR”) a Request for a Permit Review for its Walworth Facility to increase the production rate at the Walworth Facility. USG requested authorization to replace the cupola skip hoist pulley and to add a fourth downdraft fan and dry filter (blow chamber).<sup>2</sup> Replacing the skip hoist pulley with one that had a faster loading speed increased the skip hoist speed, enabling USG to load more material into the cupola in a shorter amount of time.

USG stated that the new skip hoist pulley would enable the facility to increase the cupola molten slag output from 14 metric lbs/net hr to 16 metric lbs/net hr. Adding the fourth blow chamber increased the capacity of the Walworth Facility to process this increased cupola output into mineral wool from 12,500 pounds per hour to 18,000 pounds per hour. USG should have conducted a pre-construction calculation that would have shown that the new skip hoist pulley and fourth blow chamber would cause a “significant net SO<sub>2</sub> emissions increase,” thus triggering the need for it to apply for a PSD construction permit. In addition, USG’s own production data shows that the skip hoist pulley/blow chamber modification caused an actual melt rate increase from an average of XXXX tons per hour in 1990-91 to XXXX tons per hour in 1994, and an actual hourly production increase at the Walworth Facility from an average of 7.711 tons of mineral wool per operating hour in 1990-91 (65,148 tons per year) to 11.15 tons of mineral wool per operating hour in 1994 (78,962 tons per year). Nevertheless, USG failed to: (1) obtain the proper pre-construction permits; (2) conduct appropriate pre-construction BACT analyses; and (3) install and operate BACT-level controls on the SO<sub>2</sub> emissions from the cupolas. Accordingly, at its Walworth, Wisconsin facility, USG violated and continues to violate the PSD

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<sup>2</sup> The FOV/NOV U.S. EPA issued to USG states that the Walworth Facility violated PSD solely by installing the skip hoist pulley. After the FOV/NOV and the Section 113 Conference, U.S. EPA discovered that the March 23, 1992 Request for Permit Review USG filed with WDNR was not just for the skip hoist pulley installation, but also included adding a fourth blow chamber at Walworth as part of the same permitted project. U.S. EPA thus considers the complete project in the March 23<sup>rd</sup> Request for Permit Review to be the Walworth “major modification” that violated and continues to violate Section 165 of the CAA, 42 U.S.C. § 7475, 40 C.F.R. §§ 52.21(i), (j), (k), and (r), and Wis. Admin. Code §§ 406.03, 405.07, and 405.08.

requirements under Section 165 of the CAA, 42 U.S.C. § 7475, the implementing regulations of Title V set forth at 40 C.F.R. Part 70, and the Wisconsin State Implementation Plan.

***Jenny-Are these the actual production increase figures, or just what was listed in the Capital Authorization Documents? Can I see the data behind this?***

## **II. The Walworth and Red Wing Modifications Triggered PSD Requirements and the Installation of BACT**

USG first contends that modifications to the skip hoist at the Red Wing and Walworth facilities are exempt from PSD because the skip hoist is not part of the “emissions unit” at either facility. In support, USG argues that it could not install BACT to the skip hoist, and in support cites 40 C.F.R. § 52.21(j)(3), which states:

A major modification shall apply best available control technology for each regulated NSR pollutant for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit.

USG then contends that under PSD, “BACT [best available control technology] only applies to a physically or operationally changed ‘emissions unit,’” which is defined as, “any part of a stationary source that emits or would have the potential to emit any regulated NSR pollutant.” See 40 C.F.R. § 52.21(b)(7).

The first step to determine whether a source violated PSD is examining whether the work performed at the source fulfills the definition of “major modification.” In the Clean Air Act, Congress mandated that *any* modification of a major stationary source triggered application of PSD/NSR (hereinafter “PSD”). See 42 U.S.C. § 7411(a)(4). U.S. EPA subsequently promulgated regulations limiting PSD-triggering “modifications” to “major modifications,” which U.S. EPA defined as including *inter alia* activities which involve both a physical change to a major stationary source, and a resulting significant emissions increase of a regulated pollutant. See 40 C.F.R. § 52.21(b)(2)(i).

If the work is a “major modification under 40 C.F.R. § 52.21(b)(2)(i), the second step is to then determine what controls a source must install. Under 40 C.F.R. § 52.21(j)(3), a source must install BACT for each regulated PSD pollutant on the “emissions unit” involved in the “major modification,” not every “emissions unit” at the source. For example, if an electricity generating unit performs work on only one out of seven boilers, it must install BACT only on that one boiler, not all seven boilers.

USG interprets the “emissions unit” language of 40 C.F.R. § 52.21(j)(3) to mean that courts must analyze whether the work constituting the “major modification” was performed at an “emissions unit.” USG’s argument is based upon a strained reading of the PSD Regulations and improperly inserts BACT requirements and language (“emissions unit”) as an additional requirement to the “physical change to a major stationary source” required for work to be considered a “major

modification.” Whether a project was a “major modification,” and what “emissions units” must have BACT installed on them, are independent analyses. There is no legal support for USG’s contention that a “major modification” only applies to work performed on an “emissions unit.”

In contrast, a physical change to a facility component not directly emitting pollutants has been held to be a “major modification” under 40 C.F.R. § 52.21(b)(2)(i). In *United States v. Ohio Edison*, 276 F. Supp. 2d 829 (S.D. Ohio. 2003), the court examined whether replacement of power plant coal pulverizers were “major modifications” under PSD. *Ohio Edison*, 276 F. Supp. 2d at 846-47. Power plant pulverizers are not emissions units, yet the court held that replacing older pulverizers with newer units constituted “major modifications” that the Defendant should have determined would cause a “significant net emissions increase.” See *Ohio Edison*, 276 F. Supp. 2d at 862, 884, 889.<sup>3</sup>

Pulverizers crush coal fed to them from a bunker to a powdery consistency, which is then fed via coal pipes to burners for ignition. Skip hoists load the cupolas with metcoke and other materials for melting. Skip hoists and pulverizers are thus both necessary to load the corresponding emissions units with the appropriate materials, but neither process directly emits pollutants. It necessarily follows that to trigger PSD review, a modification does not have to be undertaken at an “emissions unit.”

### **III. The Walworth and Red Wing Modifications Caused a Significant Net Emissions Increase.**

USG next claims that the projects at USG’s Facilities did not trigger a “significant net emissions increase” of a CAA regulated pollutant because:

- (1) the 1993 Pulley Change at Walworth did not increase the melt rate of the cupola because the Walworth Skip Hoist sits idle between charges, so increasing its movement speed by 15 seconds per charge does not affect the production rate, and correspondingly the cupola’s emission rate;
- (2) the Red Wing Skip Hoist project did not enable USG to charge the cupola any faster because the melt rate of the cupola remained constant; (*Co. claims the new system was slower-doesn’t matter because the bucket could safely carry more materials*)
- (3) the Red Wing Skip Hoist project was performed for safety, not to increase production (purpose doesn’t matter for PSD, its whether it results in a significant net emissions increase). NEED TO INDIVIDUALLY ADDRESS THESE.

#### **Significant Net Emissions Increase for PSD Purposes**

A “net emissions increase” is “the amount by which the sum of the following exceeds zero: a) any increase in emissions from a particular physical change or change in the method of operation at a stationary source; and b) any other increases and decreases in actual emissions at the source

<sup>3</sup> Nor was BACT applied to the pulverizers in Ohio Edison. Rather, replacing the pulverizers triggered the application and installation of BACT on the boiler associated with the coal produced by the new pulverizers (Boiler 6). The remaining six boilers at the facility were not required to install BACT based on the pulverizer replacement, but because of “major modifications” performed at other equipment associated with those boilers.

that are contemporaneous with the particular change and are otherwise creditable.” 40 C.F.R. § 52.21(b)(3)(i). EPA determines whether a “significant net emissions increase” will occur (or already has occurred) as a result of a modification at a non-electricity generating source, by comparing the actual pre-modification emissions with the potential post-modification emissions at the facility.

If comparing the actual pre-modification emissions with the potential post-modification emissions shows that a project caused a net emissions increase of a PSD regulated pollutant, the final step is to determine whether the increase was “significant.” A “net emissions increase” of SO<sub>2</sub> of 40 tpy or more is a “significant” net emissions increase. 40 C.F.R. § 52.21(b)(23)(i). If a project is likely to cause a significant net increase of a pollutant subject to regulation under the CAA, the source must apply for and obtain a pre-construction PSD permit for the proposed facility or modification pursuant to the applicable PSD regulations. *See* 40 C.F.R. §§ 52.21(a)(2), (j)(3)-(4). CHECK THESE.

***(Jenny-Do our Calcs below include the SO2 from the Slag, or just the Metcoke? Can we go over those again please?)***

### **Red Wing Cupola Skip Hoist Motor/Gearbox Modification**

USG replaced the skip hoist motor at the Red Wing Facility in 1996 for the explicit purpose of obtaining a production increase.<sup>4</sup> The Capital Request and Authorization for the project states that the modification would allow the Facility to increase the amount of material in each bucket load from 3,500 pounds to 5,500 pounds, thereby increasing the slag melt rate in the No. 2 Cupola from 5 tons per hour to 8 tons per hour. While not relevant to the pre-construction PSD permitting process that the Facility should have undergone, the post-modification melt rate data demonstrates that the skip hoist motor replacement at the Red Wing Facility resulted in an actual production and emissions increase. *(Add the actual before and after melt rates.)*

By facilitating increases in the rate and amount of molten slag produced at the Red Wing Facility, the skip hoist modification caused an associated increase in SO<sub>2</sub> emissions. U.S. EPA used USG’s information to calculate the emissions changes at the No. 2 Cupola due to the 1996 skip hoist project in two different ways: Actual-to-Potential and Actual-to-Actual. These calculations show that the skip hoist project resulted in an SO<sub>2</sub> emissions increase at the No. 2 Cupola above the significance threshold for SO<sub>2</sub> (40 tpy), not only on an Actual-to-Potential basis (*i.e.* the test that was required at the time of the project), but also on an Actual-to-Actual basis (786.8 tpy). Consequently, the 1996 Red Wing skip hoist project resulted in a significant SO<sub>2</sub> emission increase.

USG claims that the Red Wing Skip Hoist project did not enable USG to charge the cupola any faster because the melt rate of the cupola remained constant. In fact, USG claims that the project made the skip hoist run at a slower rate than immediately before the project.

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<sup>4</sup> While USG claims that the sole purpose for the Red Wing Skip Hoist project was to increase the safety of the unit, not to increase production, the actual purpose is irrelevant under PSD analysis since PSD does not include a “safety exemption.” Rather, the focus is whether the company performed a “major modification” resulting in a “significant net emissions increase” of a PSD regulated pollutant.

## QUESTIONS

1. Are they talking about immediately before the project, or the original or rated speed?
2. Hoisting speed is only one part of the material delivery equation-the amount of materials is the other, which the company's documents shows was the primary reason for the project.
3. The melt rate didn't remain constant (Actuals).
4. The potential melt rate didn't remain constant (proper PSD review).

### **Walworth Cupola Skip Hoist Pulley and Blow Chamber Modification**

USG replaced the skip hoist pulley at the Walworth Facility beginning in 1992 to obtain a production increase. USG stated that replacing the existing skip hoist pulley with one that had a faster loading speed would cause an increase in the melt rate of the cupola from 14,000 pounds per hour to 16,000 pounds per hour, *i.e.* a projected melt rate increase of two thousand pounds per hour (one ton per hour). Adding the fourth blow chamber at the Facility increased the total blow chamber process capability at the Walworth Facility from 12,500 pounds per hour to 18,000 pounds per hour, *i.e.* a projected capacity increase of 5,500 pounds per hour (2.75 tons). The skip hoist pulley/blow chamber modification caused an actual hourly production increase at the Walworth Facility from an average of 7.711 tons of mineral wool per operating hour in 1990-91 to 11.15 tons of mineral wool per operating hour in 1994. The annual total mineral wool production at Walworth increased from a 1990-91 average of 65,148 tons to 78,962 tons in 1994. The Walworth production rate data shows that the skip hoist pulley/blow chamber modification at the Walworth Facility resulted in a production increase. *(Add the actual before and after melt rates.)*

By facilitating a production rate increase, the skip hoist pulley/blow chamber modification caused an associated increase in SO<sub>2</sub> emissions. U.S. EPA used USG's information to calculate the emissions changes associated with the 1992-1993 skip hoist pulley/blow chamber project. As with the calculations for the Red Wing plant, the Region computed the emission changes in two different ways: Actual-to-Potential and Actual-to-Actual. These calculations showed that the skip hoist pulley/blow chamber project resulted in an emission increase above the significance threshold for SO<sub>2</sub> (40 tpy) not only on an Actual-to-Potential basis, (*i.e.* the test that was required at the time of the project), but also on an Actual-to-Actual basis (527.0 tpy). Consequently, the 1992-93 Walworth skip hoist pulley/blow chamber project resulted in a significant emissions increase.

- (1) the 1993 Pulley Change at Walworth did not increase the melt rate of the cupola because the Walworth Skip Hoist sits idle between charges, so increasing its movement speed by 15 seconds per charge does not affect the production rate, and correspondingly the cupola's emission rate;

### **III. The Walworth and Red Wing Modifications Were Major Modifications, Not Routine Maintenance, Repair, and Replacement.**

USG next claims that the projects at the USG Facilities don't rise to the level of being "major modifications," because the projects were "routine maintenance, repair or replacement" which are excluded from PSD review.

### **Routine Maintenance, Repair or Replacement**

As discussed *supra*, the Walworth and Red Wing Projects were "major modifications" (*i.e.* "physical changes" performed by a major stationary source resulting in a significant net emissions increase of a regulated pollutant, and triggering PSD permitting requirements, as well as the duty to install BACT pollution controls). *See* 42 U.S.C. §§ 7475(a), 7479(2)(C) and 7503(a). USG claims that the projects at its Walworth and Red Wing Facilities were "routine maintenance, repair or replacement" (RMRR) activities that were exempt under 40 C.F.R. § 52.21(b)(2)(iii)(a) from the general rule that a "major modification" is subject to pre-construction PSD review, approval, and other requirements.

To determine whether projects such as the USG projects were a "major modification" or an exempt "RMRR Activity," U.S. EPA (and courts) reviews the projects on a case-by-case basis, considering criteria collectively referred to as the "*WEPCO* factors," which includes the nature and extent, cost, purpose and frequency of each project. *See WEPCO*, 276 F.2d at 852.

Reviewing USG's projects in light of the *WEPCO* factors shows the following:

### **Red Wing Skip Hoist Motor/Gearbox Modification**

#### **i. Description of Physical Changes**

##### **Nature and Extent:**

- Replaced motor/gearbox for the No. 2 Cupola skip hoist, which had been in service for 16 years.
- The Capital Request and Authorization states that "[the No. 2] skip hoist is undersized for the present production rates and during upset conditions is severely overloaded. When the bucket becomes over filled during upset conditions the 3,500 pound capacity hoist has the potential to be lifting over 5,500 pounds of materials. Originally installed in 1980 when cupola melt rates were less than five tons per hour, the hoist now transports raw materials in excess of eight tons per hour. The higher production rates along with occasional overloading results in frequent maintenance repairs and obvious safety hazards."
- The Capital Request and Authorization further states that "[t]he new hoist will have the capacity to handle higher production rates and occasional overloading of the bucket. This will result in safer operation and reduced maintenance costs by using equipment specifically designed for the higher operating rates."

- The project was completed September 1, 1996.

**ii. Cost, Purpose, and Frequency**

**Cost:**

The total approved capital expenditure cost to replace the No. 2 Cupola skip hoist motor/gear box was \$24,950.

**Purpose and Benefits:**

The project enabled USG to maintain unit reliability and increase production by a melt rate of three tons per hour.

**Frequency:**

The existing No. 2 Cupola skip hoist motor/gearbox had been in service for 16 years.

**Walworth Cupola Skip Hoist Pulley and Blow Chamber Modification**

**i. Description of Physical Changes**

**Nature and Extent:**

- Skip Hoist pulley replacement and addition of fourth blow chamber downdraft fan and dry filter.
- The estimated start date was July 1, 1992.
- The unit went back on line after the project on January 20, 1993.

**ii. Cost, Purpose, and Frequency**

**Cost:**

The total approved capital expenditure cost to upgrade the skip hoist pulley and add the fourth downdraft fan and dry filter was approximately \$240,000.

**Purpose and Benefits:**

- USG stated in its minor source permit application to WDNR that the modification increased the total blow chamber process capability “from the present limit of 12,500 pounds per hour to 18,000 pounds per hour.” USG claimed that the skip hoist process “will not change, except for a change in a V-belt pulley to speed up the skip hoist. Only the production rate will change, but it will not exceed the operating capacity of the process.”
- USG stated in the capital appropriation request that installing a fourth



downdraft fan and dry filter would increase the blow chamber capacity by 28%. This allowed USG to increase its melt rate from 14 metric tons/net hr to 16 metric tons/net hr.

- The additional blow chamber added the ability to produce more mineral wool at the end of the manufacturing process at Walworth. The modification to the skip hoist pulley eliminated a bottleneck in production to take advantage of the increased blow chamber capacity. Together these two changes resulted in higher production.

*I'd like to avoid the term "bottleneck," and we need more discussion on the skip hoist pulley modification. How did it allow USG to increase the melt rate?*

**Frequency:**

Capital expenditure information provided by USG shows that this type of project is infrequently undertaken.

Please do not hesitate to contact the undersigned should you require anything further.

Sincerely,

John Matson  
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Enclosures (IF APPLICABLE)

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